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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/738,855	12/18/2000	Toshiyuki Toyoshima	400846	1677

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EXAMINER

CHANG, RICK KILTAE

ART UNIT PAPER NUMBER

3729

DATE MAILED: 11/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/738,855

Applicant(s)

TOYOSHIMA ET AL.

Examiner

Rick K. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) that are not listed in item 6 below is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 11-20 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: heating step heats the first and second insulating layers to diffuse the reaction components from the first insulating layer into only a part of the second insulating layer at an interface of the first and second insulating layers; however, the original invention failed to claim this step as recited above.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 11-20 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (US 5,858,620) in view of Shinogi et al (US 6,479,900), and further in view of Endo et al (US 5,777,027) and Tsukada et al (US 6,378,201).

Ishibashi discloses the claimed invention in Figs. 1a-1b and 2a-2f and a water-soluble polyvinyl acetal.

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Ishibashi fails to disclose providing a photosensitive resin, polyvinyl acetal is a curable resin and filling the vias with conductive material.

Endo discloses polyvinyl acetal is a curable resin (title).

Tsukada discloses providing a photosensitive resin (Abstract).

Shinogi discloses filling the vias with conductive material (Fig. 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi by filling the via with conductive material, as taught by Shinogi, for the purpose of electrically communicating between different circuit layers.

Further, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi by polyvinyl acetal is a curable resin, as taught by Endo, for the purpose forming cross-linking.

In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi by providing a photosensitive resin, as taught by, for the purpose of forming via holes using conventional photolithographic techniques.

4. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al (US 5,858,620)/Shinogi et al (US 6,479,900)/Endo et al (US 5,777,027)/Tsukada et al (US 6,378,201) as applied to claim 1 above, and further in view of Rokugawa (US 6,434,819).

Ishibashi/Shinogi/Endo/Tsukada discloses a water-soluble polyvinyl acetal.

Ishibashi/Shinogi/Endo/Tsukada fail to disclose epoxy resin.

Rokugawa discloses epoxy resin (16) thereby easily cured by heating and irradiated by a laser beam to form vias or recesses.

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Ishibashi/Shinogi/Endo/Tsukada by providing epoxy resin, as taught by Rokugawa, for the purpose of easily cured by heating and irradiated by a laser beam to form vias or recesses.

Response to Arguments

5. Applicant's arguments with respect to claims 1-3 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. **Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to all the claimed limitations as well as support in the disclosure for better clarity. Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (703) 308-4784. The examiner can normally be reached on 5:30 AM to 1:30 PM, Monday through Thursday.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9302 for regular communications and (703) 872-9303 for After Final communications.

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RICHARD CHANG
PRIMARY EXAMINER

RC

November 24, 2003